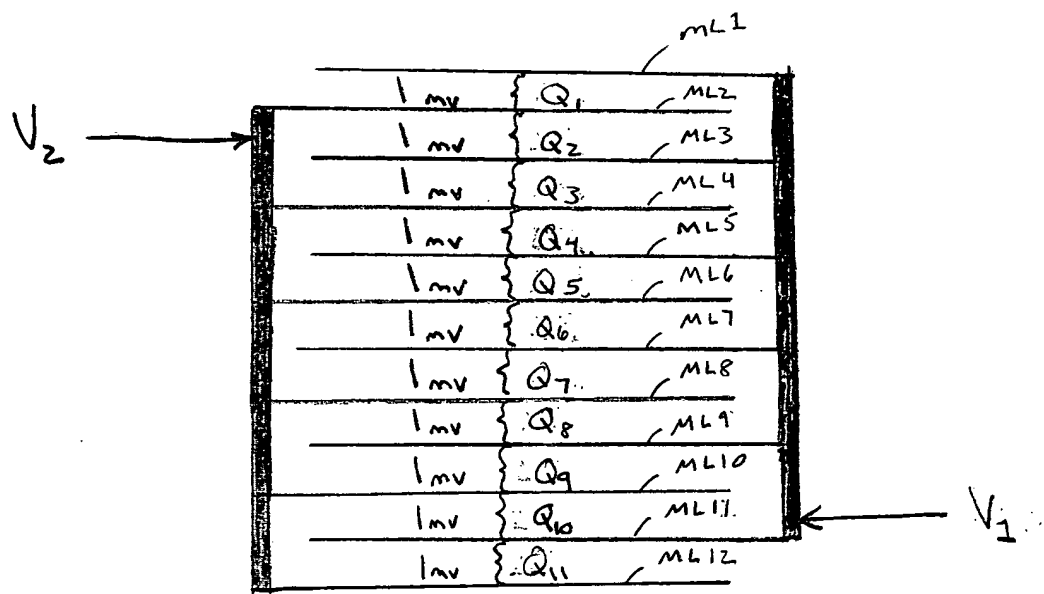


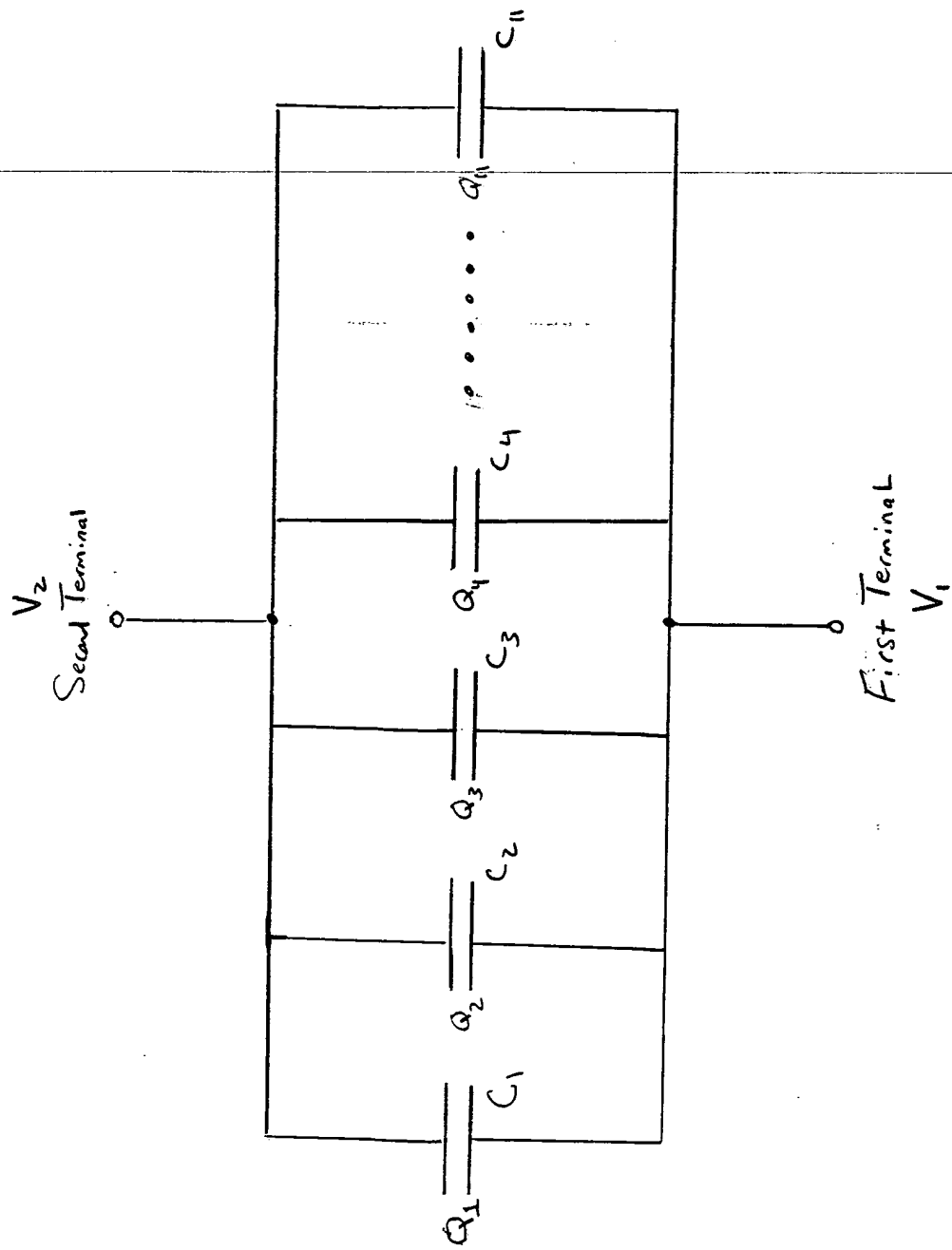
Fig. 1



$$Q_{\text{Total}} = Q_1 + Q_2 + Q_3 + Q_4 + Q_5 + Q_6 + Q_7 + Q_8 + Q_9 + Q_{10} + Q_{11}$$

Fig. 2

Fig. 3



$$Q = CV$$

$$C_{Total} = C_1 + C_2 + C_3 + \dots + C_n$$

$$\Delta V = V_2 - V_1$$

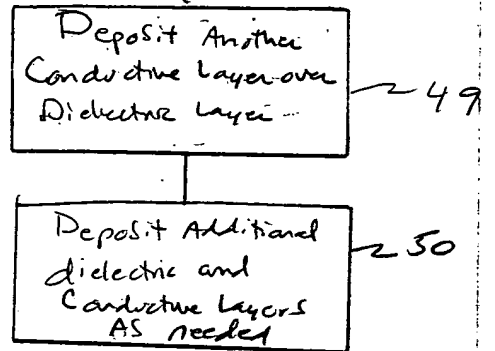
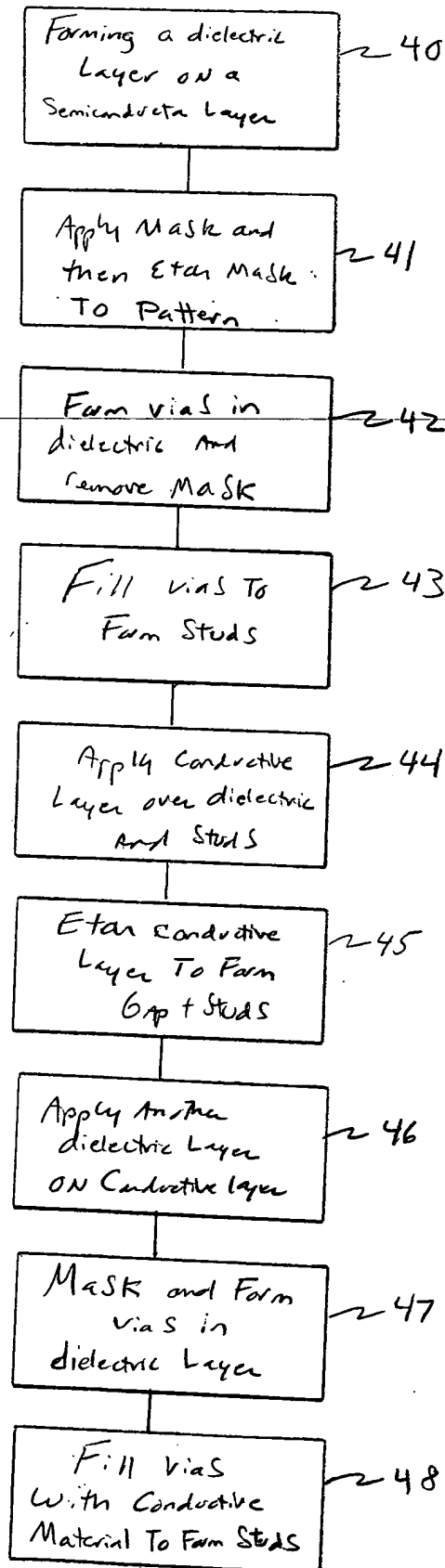


Fig. 4

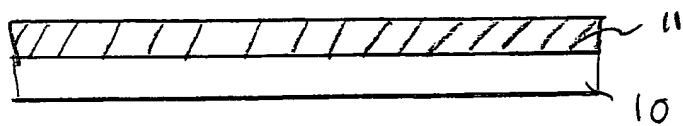


Fig. 5(a)

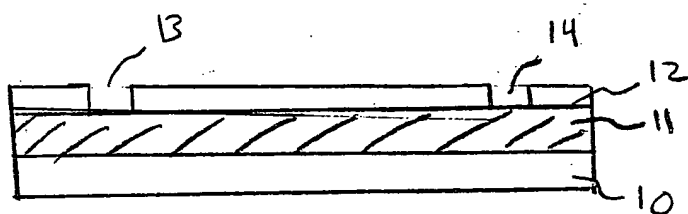


Fig. 5(b)

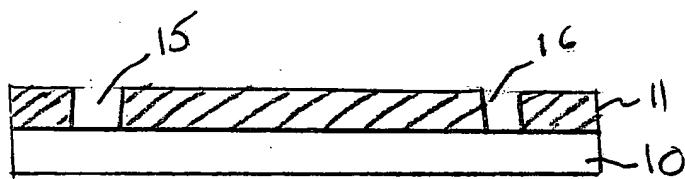


Fig. 5(c)

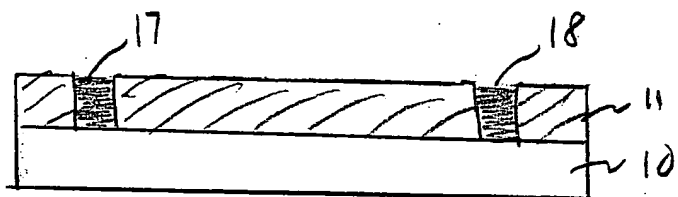


Fig. 5(d)

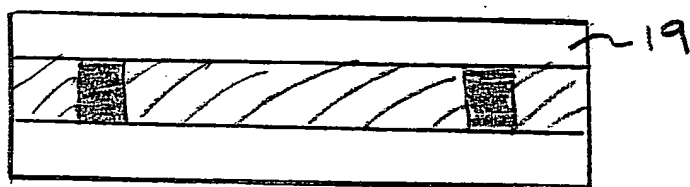


Fig. 5(e)

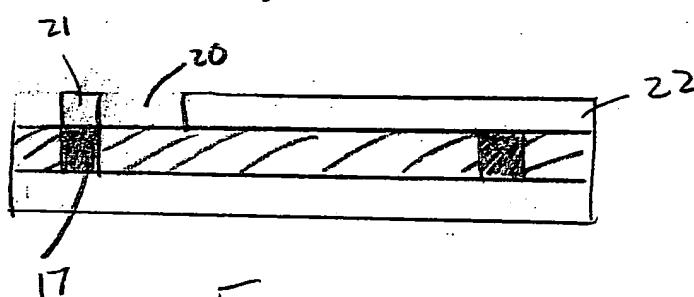


Fig. 5(f)

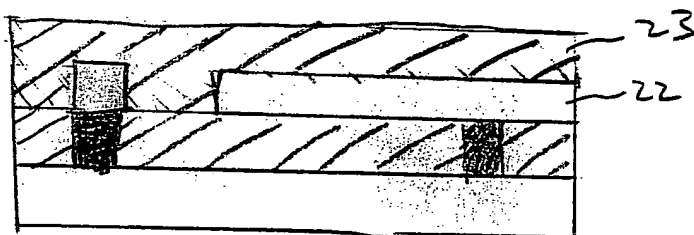


Fig. 5(g)

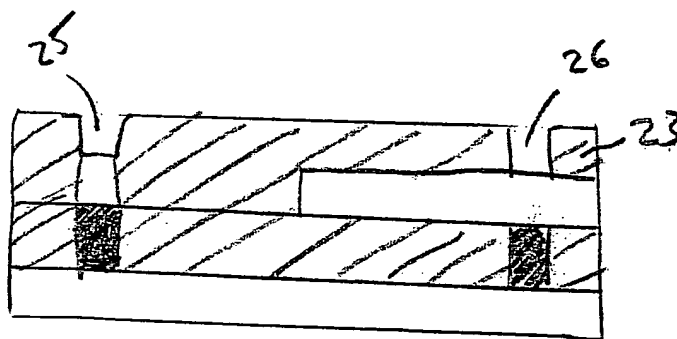


Fig. 5(h)

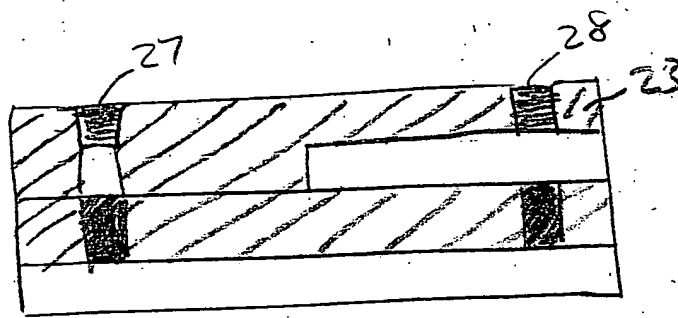


Fig. 5(i)

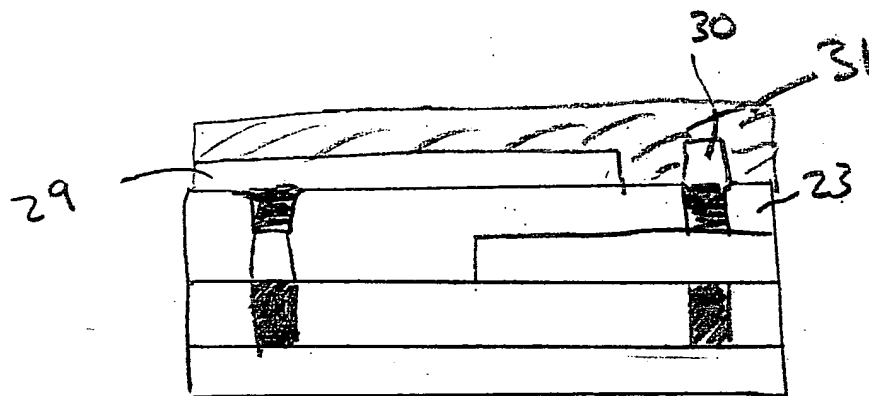
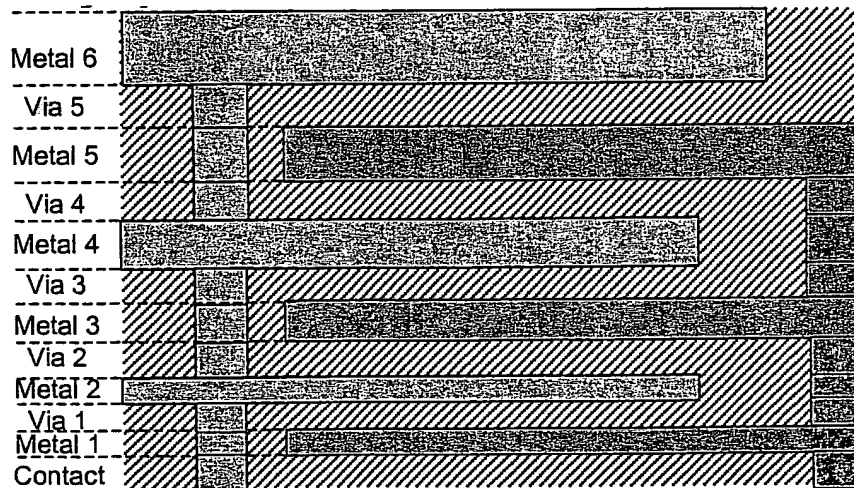


Fig. 5(j)



Terminal 2

Terminal 1

Fig. 5(k)

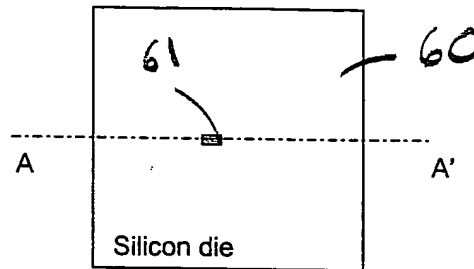


Fig. 6(a)

Equivalent capacitor

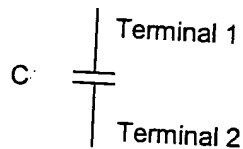


Fig. 6(b)

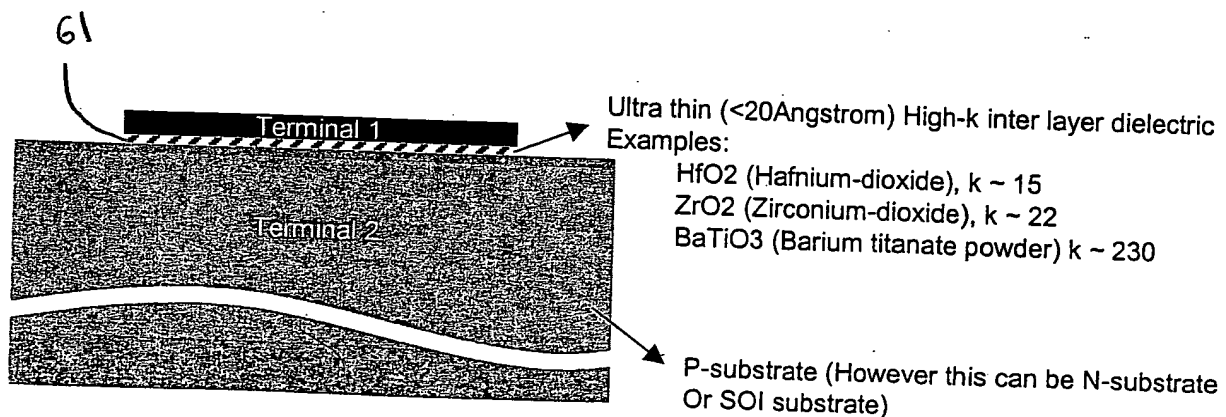


Fig. 6(c)

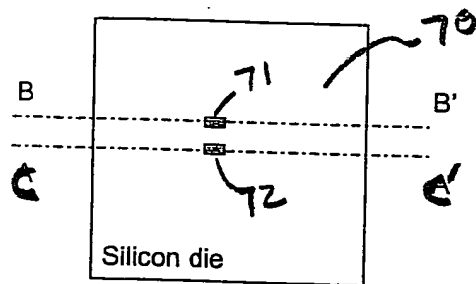


Fig. 7(a)

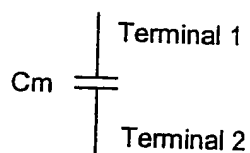


Fig. 7(b)

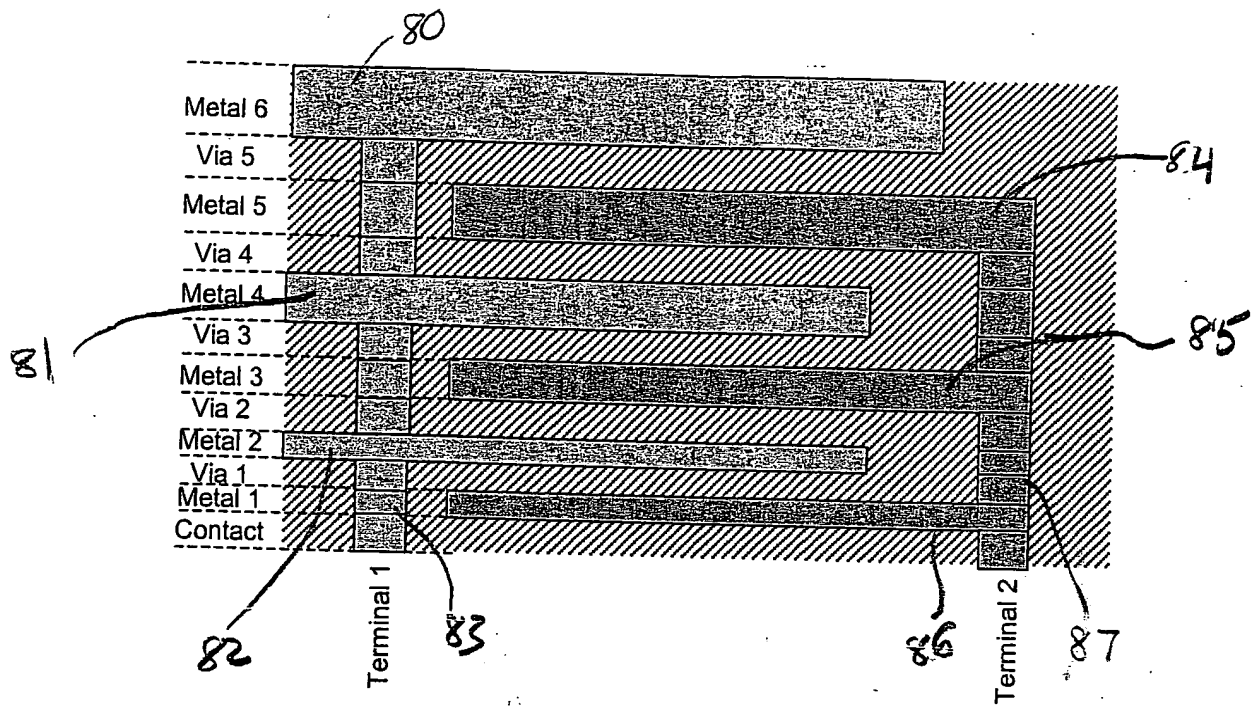


Fig. 8(a)

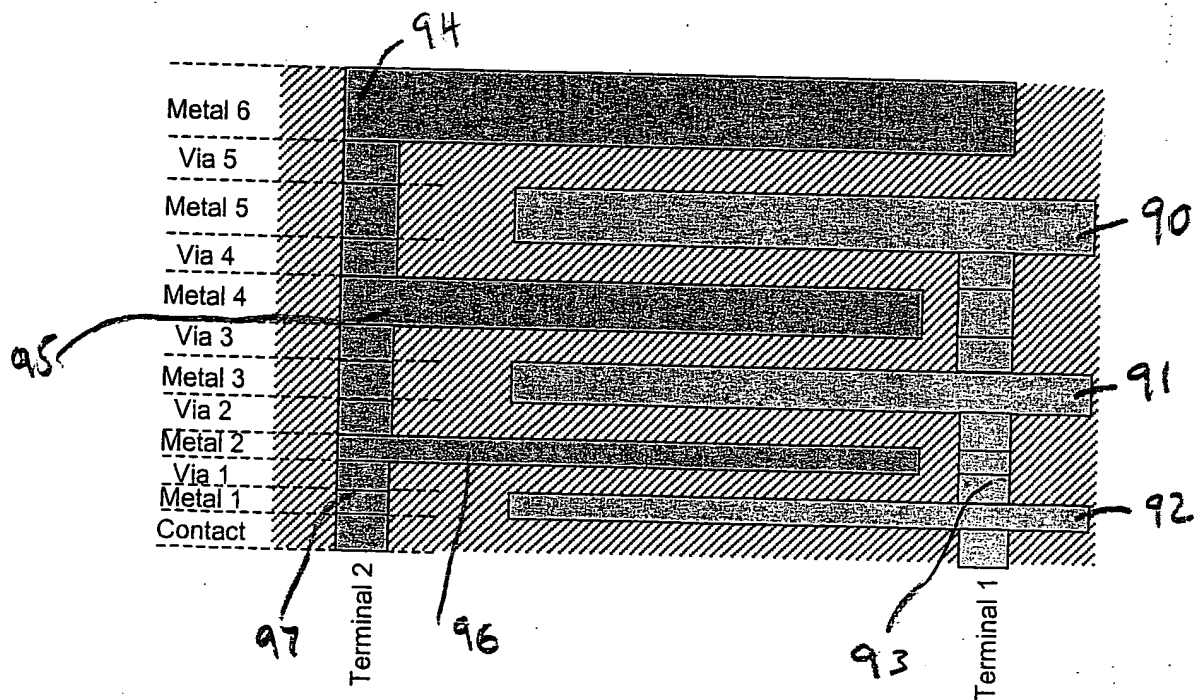


Fig. 8(b)

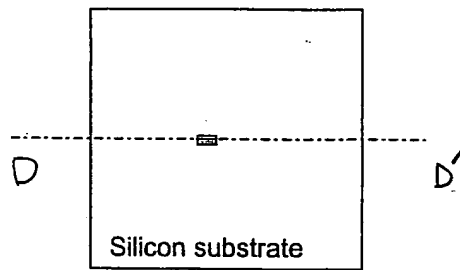


Fig. 9(a)

Equivalent capacitor

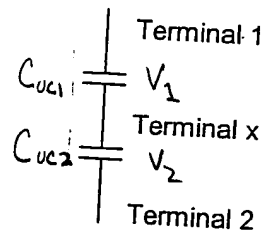


Fig. 9(b)

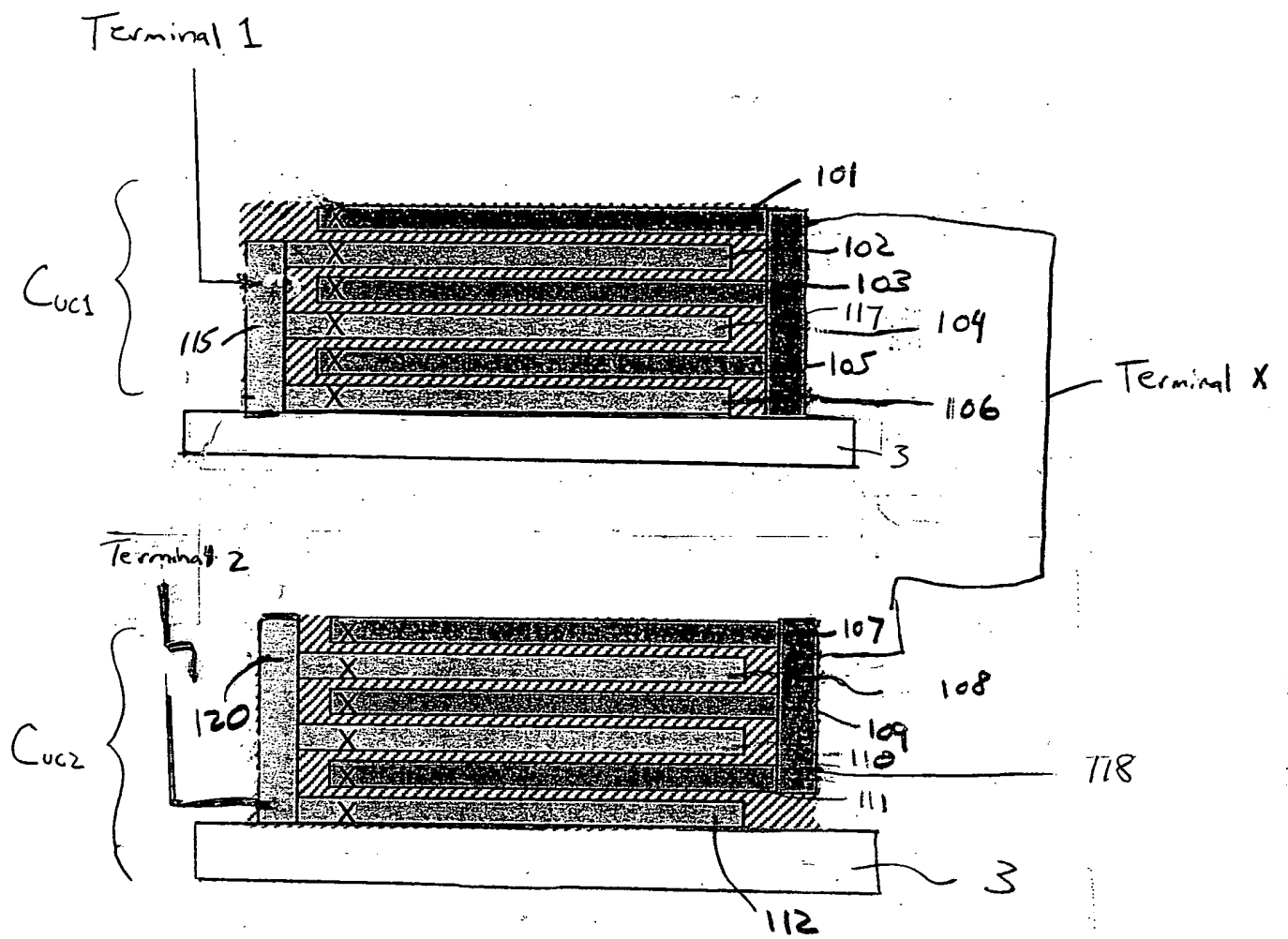
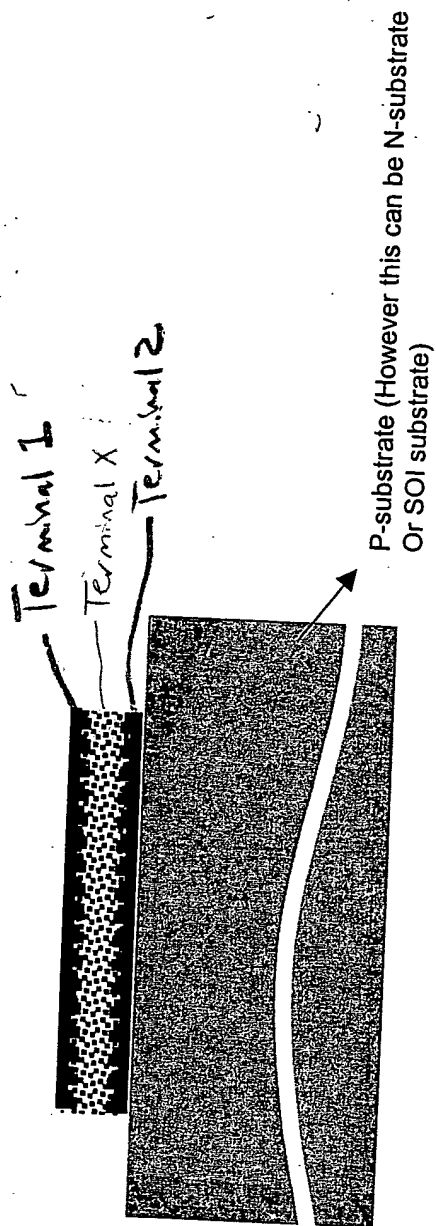


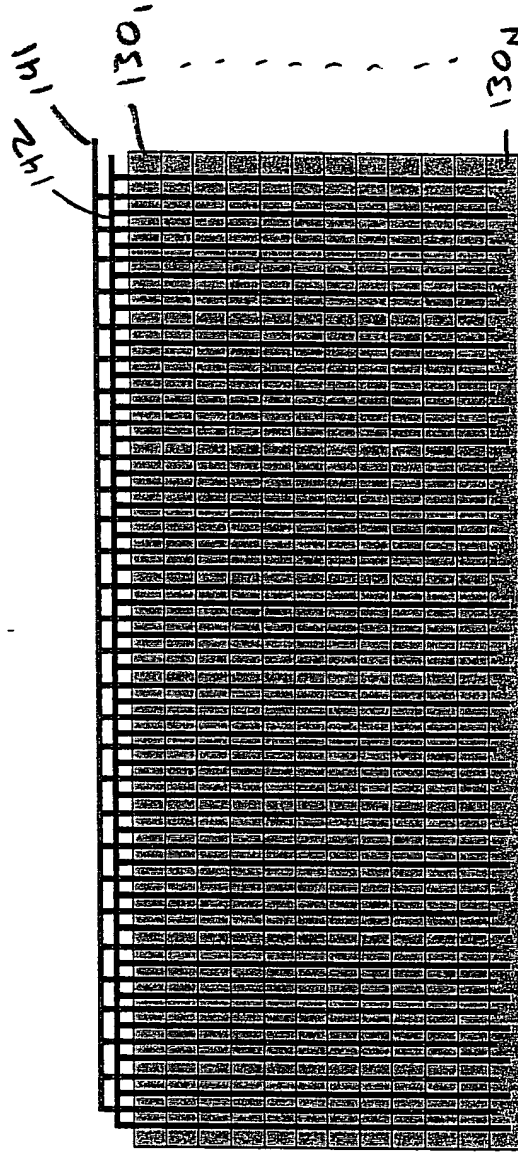
Fig. 10



Electrode (Terminal 1) – Example: Porous carbon or doped silicon. Can be conductive carbon or silicon nanotube.
 Electrolyte (Terminal x) – Example: Potassium hydroxide
 Electrode (Terminal 2) – Example: Porous carbon or doped silicon. Can be conductive carbon or silicon nanotube.

Fig. 11

Example cross section showing stacking of multiple substrate to increase the capacitance per unit area



Terminal 1
Terminal 2

Fig. 12

Energy Extraction Circuit (Integrated with the capacitor)

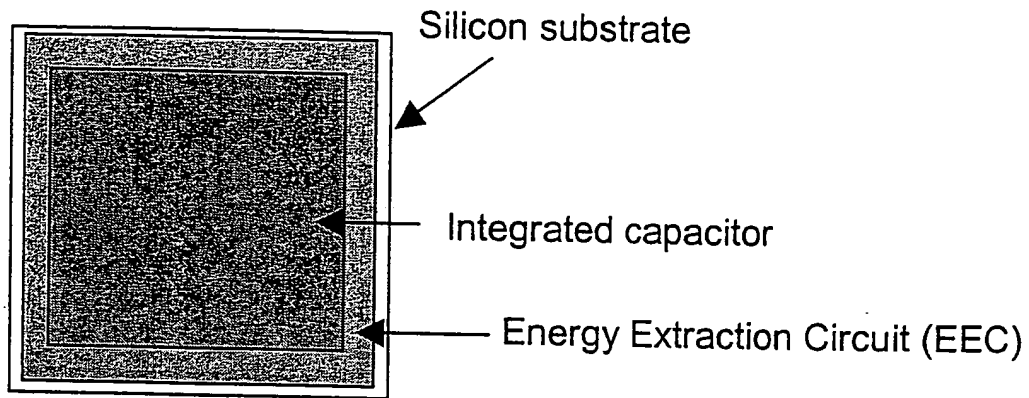


Fig. 13

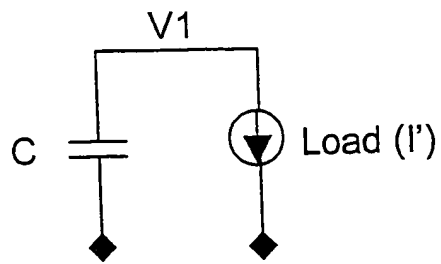


Fig. 14

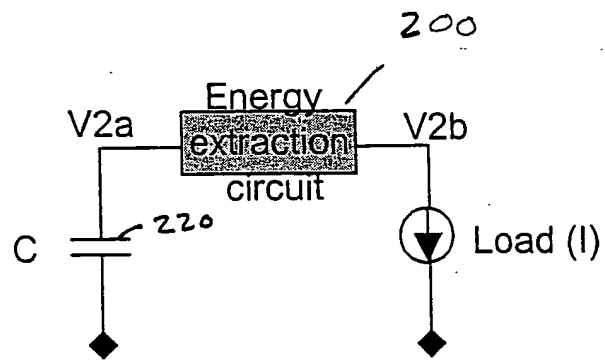
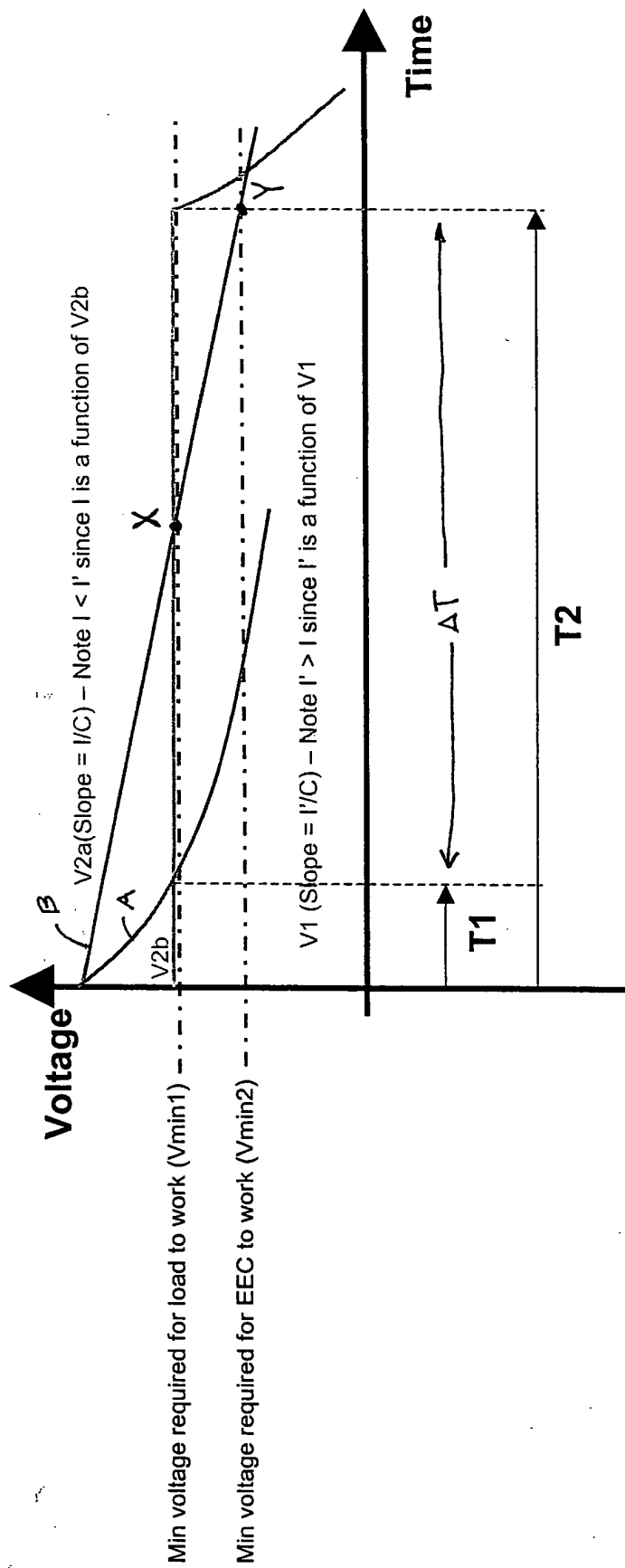


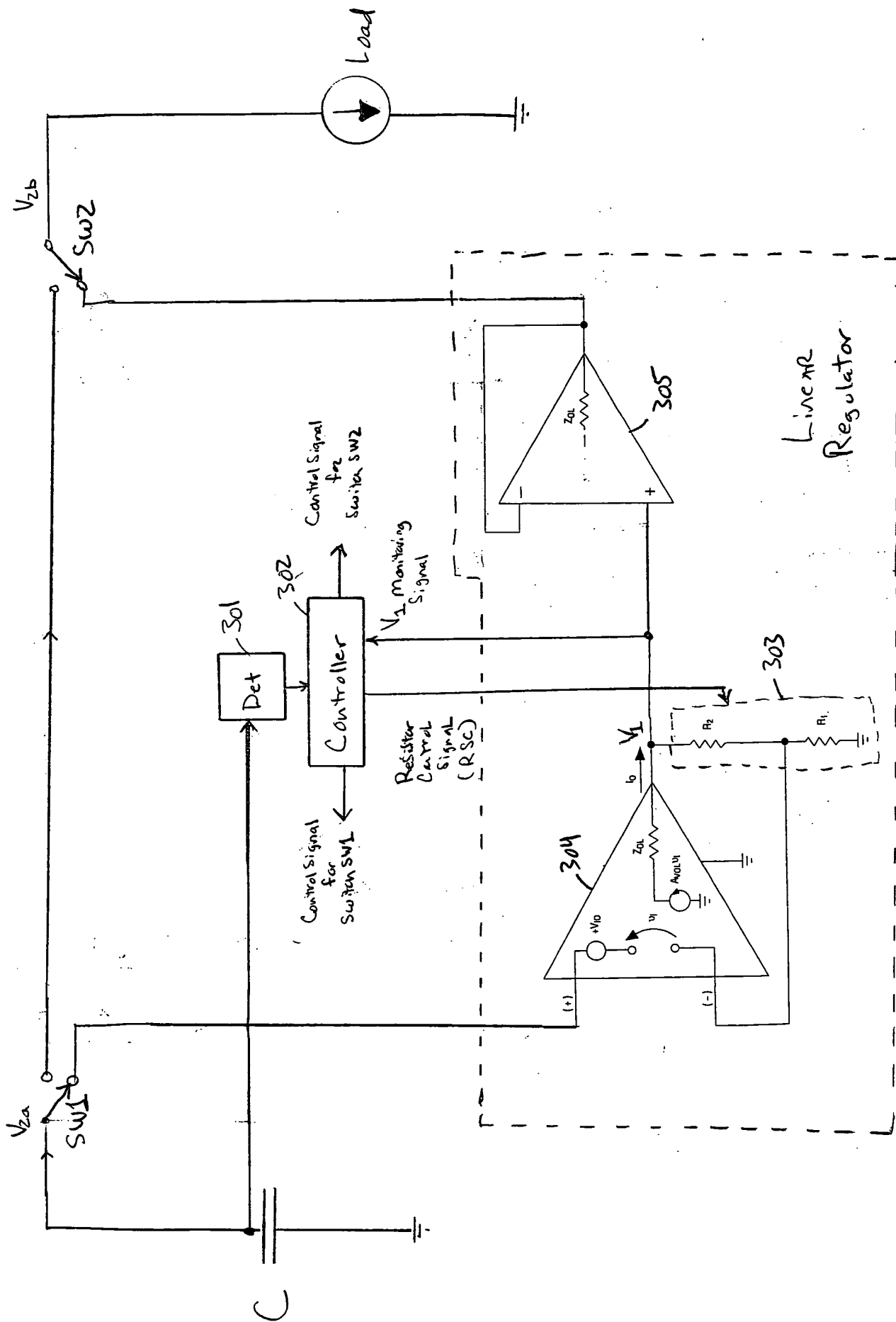
Fig. 16



T1 – Duration for which the capacitor energy can be used by load without EEC
T2 – Duration for which the capacitor energy can be used by the load with EEC

Fig. 15

Fig. 17



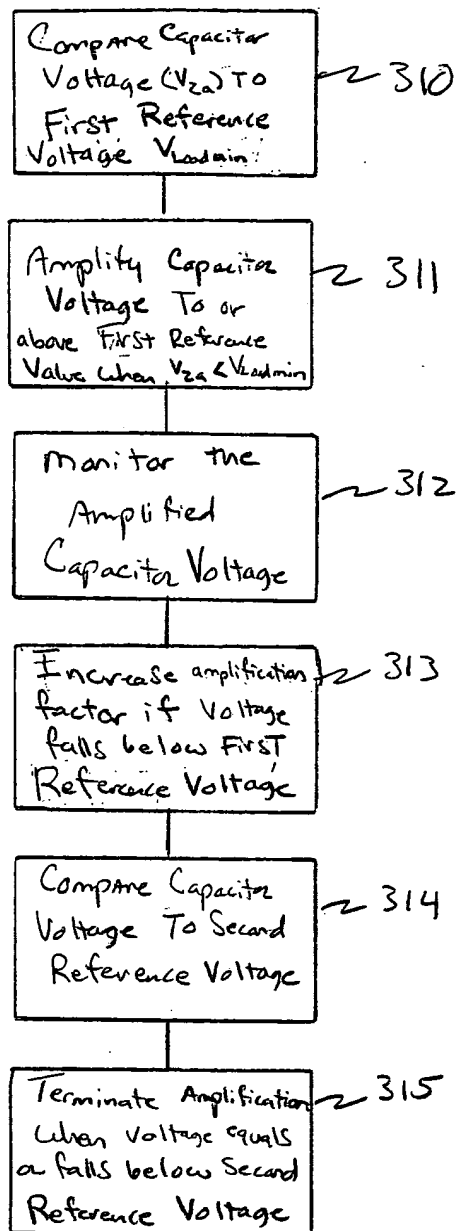
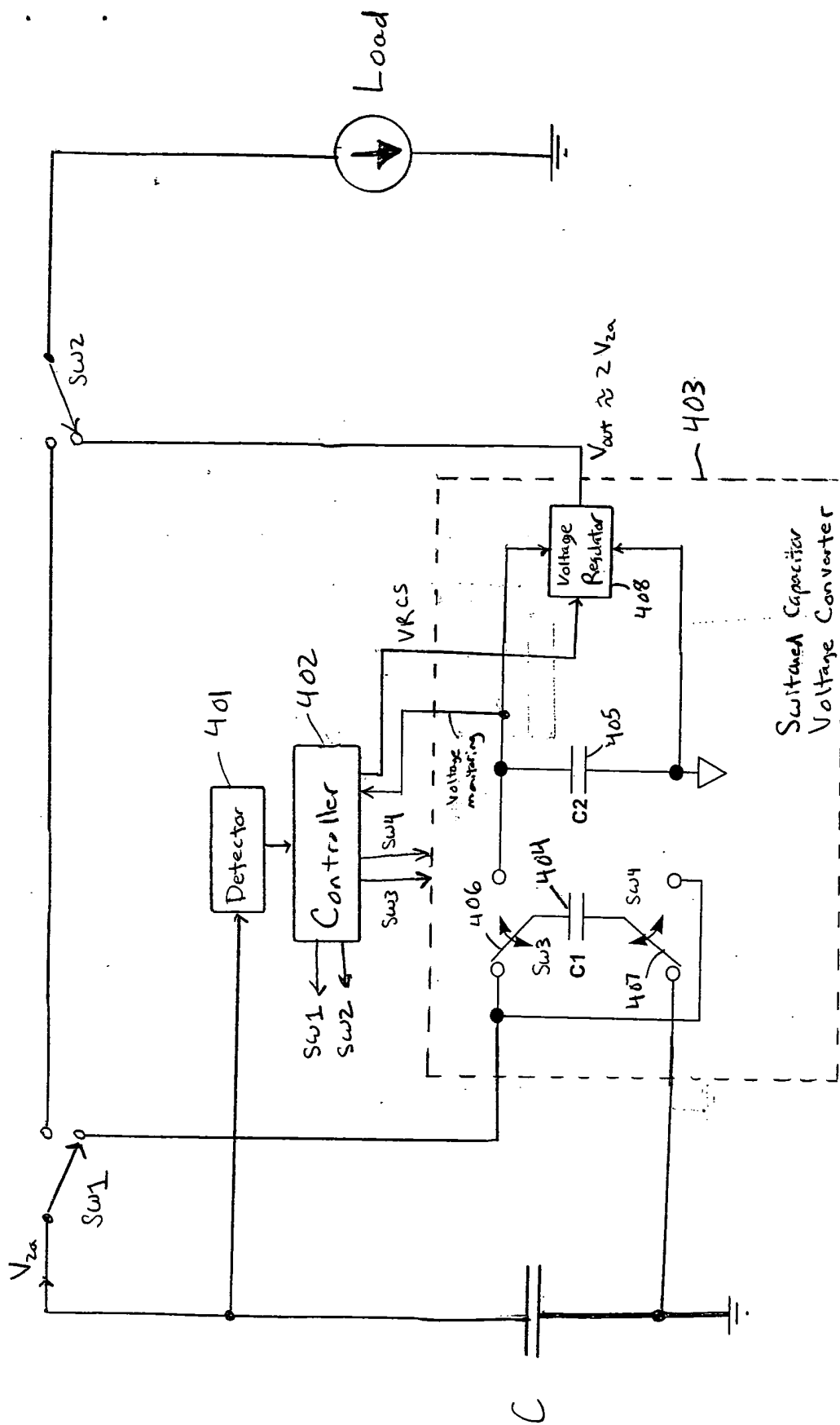


Fig. 18

Fig. 19



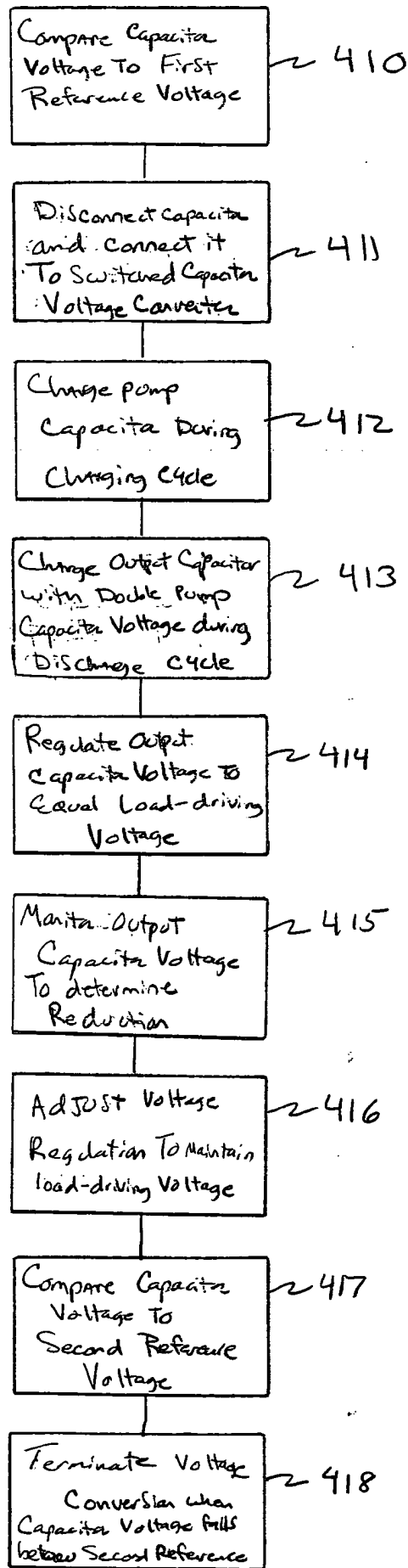
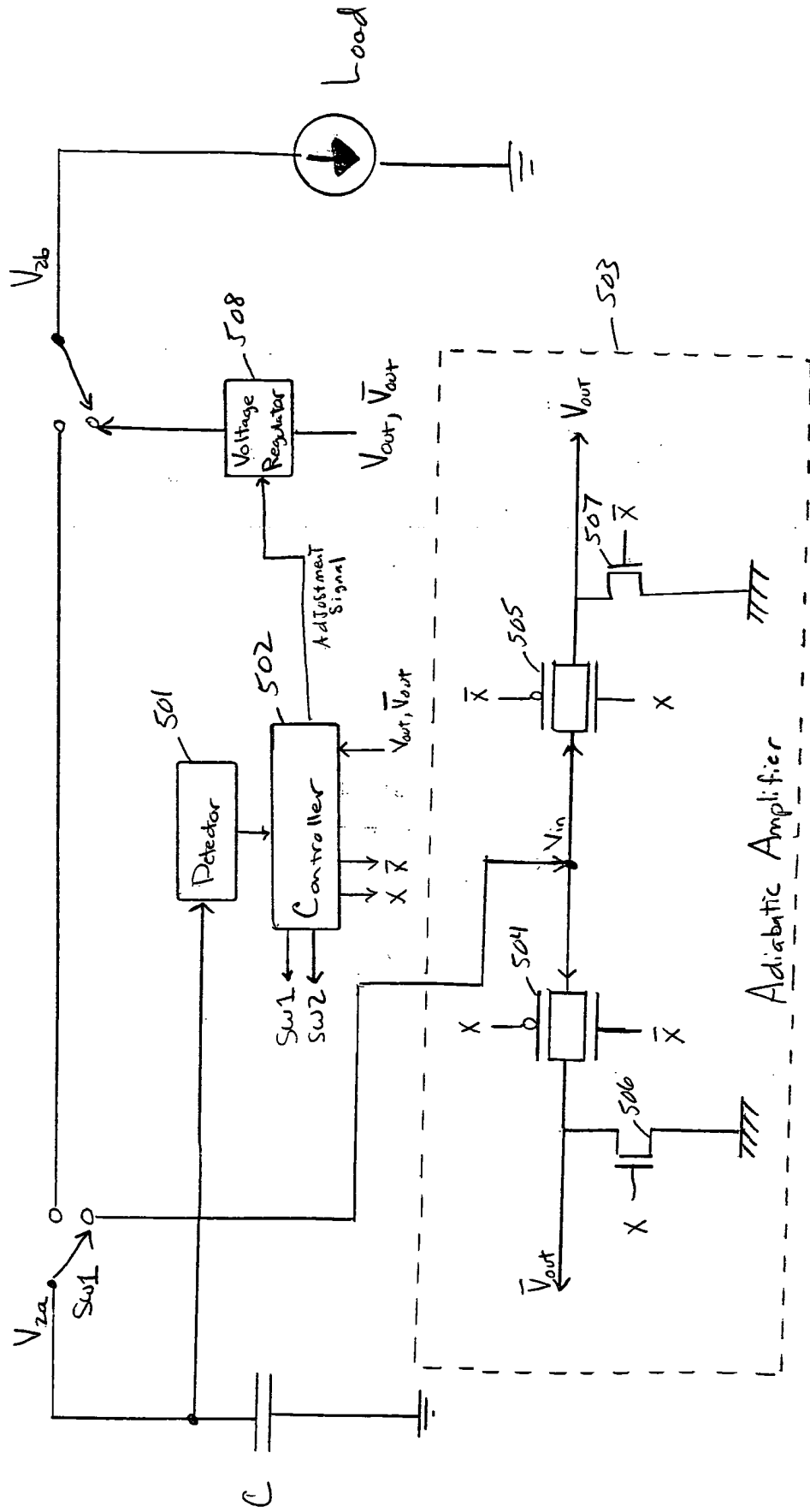


Fig. 20

Fig. 21



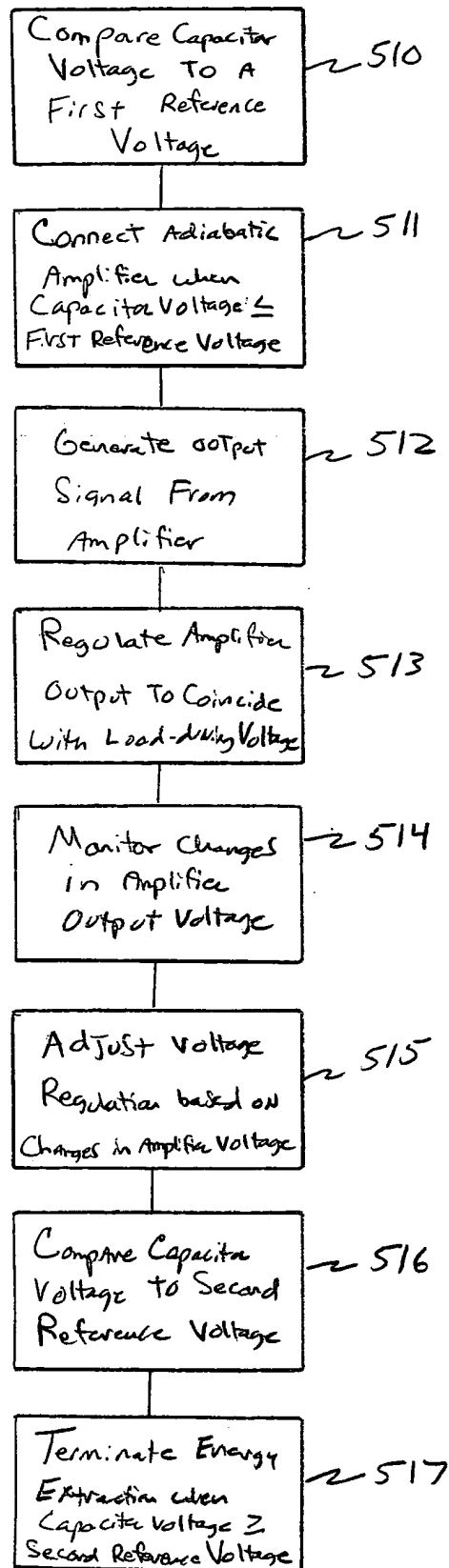


Fig. 22

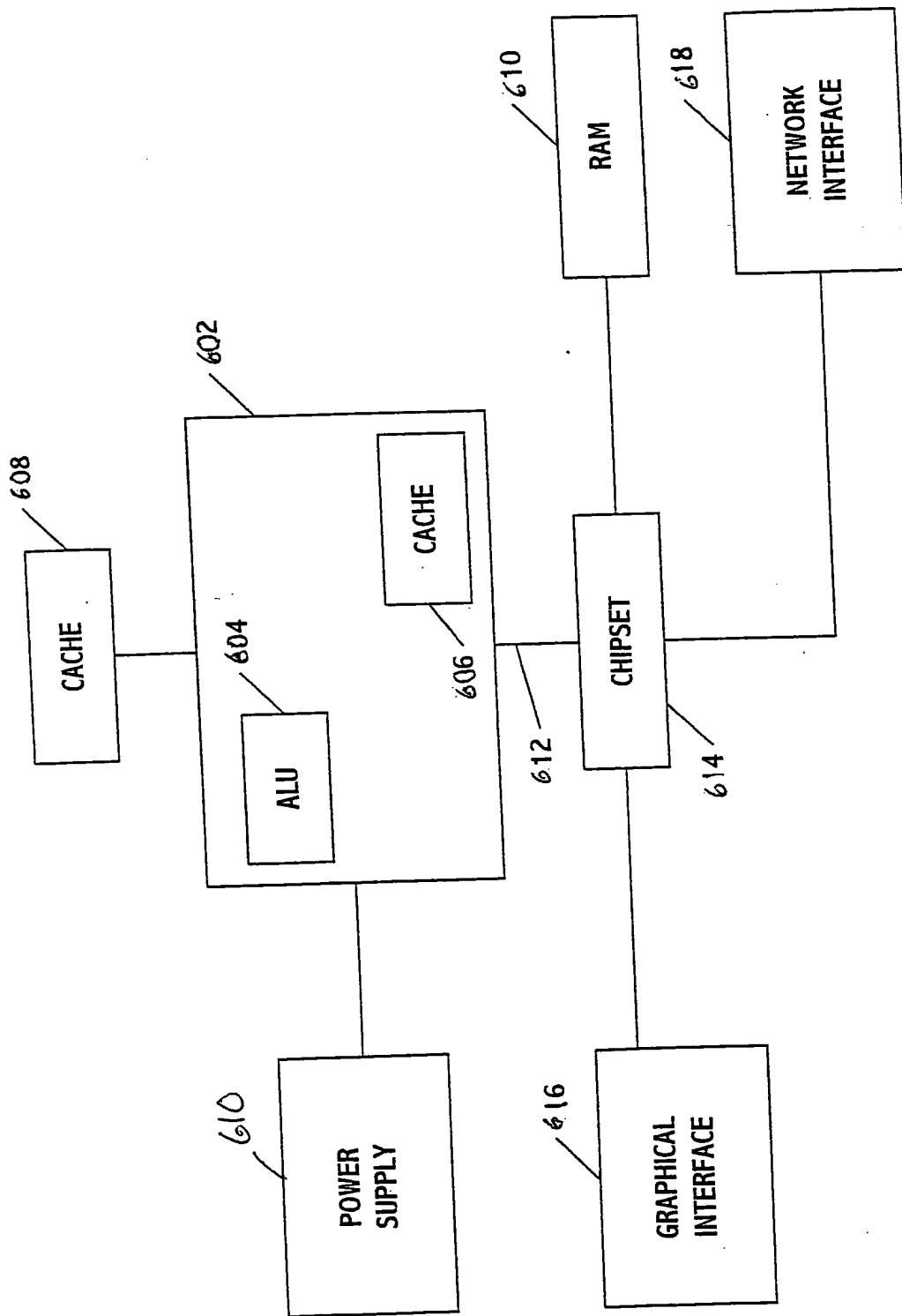


FIG. 23